

## Effects of Information Content and Evaluative Extremity on Positivity and Negativity Biases

Bogdan Wojciszke, Hanna Brycz, and Peter Borkenau

This article extends models that assume that the integration of mixed (positive and negative) information results in a negativity bias in the morality domain but a positivity bias in the competence domain. Using functional analysis, this study predicted a positivity bias for moderately evaluated information and a negativity bias for extremely evaluated information. Content domain (competence vs. morality) and evaluative extremity produced main effects in a  $2 \times 2$  experiment where 108 Ss were provided with descriptions of negative and positive behaviors of fictitious targets. As expected, the negativity effect in the morality domain was strong for extremely evaluated information but weak or nonexistent for moderately evaluated information. In contrast, the positivity effect in the competence domain was stronger for moderately than for extremely evaluated information. We suggest that positive and negative evaluations serve as approach and avoidance cues in interpersonal perception.

The border between good and evil is located within rather than between persons: Usually, the same person shows both positive and negative attributes. An exception may be characters in the trivial literature, but this literature is considered trivial exactly because it is populated with "black" and "white" characters. According to the well-known averaging model of information integration (N. H. Anderson, 1981), observers' impressions of a person should be neutral if this person shows the same number of positive and negative attributes, each to the same extent.

Numerous studies reveal, however, that even if the relative number of positive and negative attributes is controlled and balanced, negative impressions tend to emerge (e.g., Birnbaum, 1973; Fiske, 1980; Oden & Anderson, 1971; Reeder & Coovert, 1986; Reeder & Spores, 1983; Roskey & Birnbaum, 1974; Van der Pligt & Eiser, 1980; Warr, 1974). This suggests that negative information, even if equal in extremity to positive information, is given more weight in information integration, thus yielding a negativity effect. This effect has been explained in terms of the relative novelty of negative information (Fiske, 1980), its lower ambiguity (Birnbaum, 1972; Wyer, 1973), or its greater discrepancy with the general positivity of the typical or average person (Simpson & Ostrom, 1976). According to Skowronski and Carl-

ston (1989), each of these explanations is either logically flawed or lacks direct evidence in support of crucial mediators. Moreover, none of them can explain positivity effects. Yet positivity effects have also been found (Skowronski & Carlston, 1987), although considerably less frequently than negativity effects.

### Morality–Competence Differences

Two theories, the schematic model of dispositional attribution (Reeder & Brewer, 1979) and the cue-diagnostics model of impression formation (Skowronski & Carlston, 1987), assume that negativity effects occur if the integrated information refers to morality, whereas positivity effects occur if the information refers to competence-related qualities of the target. This difference is due to opposite asymmetries in the diagnostics of positive and negative behaviors in the two content domains.

For moral traits, negative (e.g., dishonest) behaviors are presumed to be more informative than positive (e.g., honest) ones because negative behaviors are perceived to be characteristic of immoral persons only, whereas positive behaviors are perceived to be performed by both moral and immoral persons. This results in a stronger impact of negative behaviors on impressions concerning morality, yielding a negativity effect in the morality domain.

In contrast, the opposite asymmetry is presumed for competence-related traits, because competent performances occur only among highly competent persons, whereas even highly competent persons may sometimes fail because of obstacles, fatigue, or lack of motivation. In the competence domain, positive behaviors are therefore more diagnostic than negative ones, resulting in a positivity of impressions concerning competence. This predicted positivity effect was obtained in one well-controlled study by Skowronski and Carlston (1987, Experiment 2), and is also suggested by attributional findings reported by Reeder and his colleagues (Reeder & Fulks, 1980; Reeder, Henderson & Sullivan, 1982; Reeder, Messick, & Van Avermaet, 1977).

---

Bogdan Wojciszke and Hanna Brycz, Department of Psychology, University of Gdansk, Gdansk, Poland; Peter Borkenau, Department of Psychology, University of Bielefeld, Bielefeld, Federal Republic of Germany.

This work was supported by an Alexander von Humboldt fellowship to Bogdan Wojciszke and by the CPBP 08.02. grant from the Polish Academy of Science to Bogdan Wojciszke and Hanna Brycz.

We thank Marysia Lewicka and John Pryor for their comments, as well as Glenn Reeder and several anonymous reviewers for their very helpful suggestions concerning drafts of this article.

Correspondence concerning this article should be addressed to Bogdan Wojciszke, Department of Psychology, University of Gdansk, Pomska 68, PL-80-343 Gdansk, Poland.

Differences in diagnosticity, however, cannot account for all findings in the information integration literature. Whereas the negativity effect has been shown in a great number of studies, the positivity effect seems to be very rare. Although some of the earlier studies requested the integration of morality-related information (e.g., Birnbaum's or Reeder's research), and their effects can therefore be explained in terms of Reeder's or Skowronski and Carlston's theories, numerous other studies used input materials that are nonclassifiable or mixed concerning the morality-competence distinction (e.g., Fiske, 1980; Hodges, 1974; Ronis & Lipinski, 1985; Wyer, 1973). The sheer number of studies that has demonstrated negativity effects suggests that other factors probably account for this effect in addition to, or in combination with, the different diagnosticity of positive and negative behaviors in the morality and competence domain. We assume that the evaluative extremity of integrated information is such a factor.

### Evaluative Extremity of Integrated Information

The differentiation of behavioral information in terms of morality and competence relatedness refers to its descriptive meaning: Which traits, goals, or other qualities of actors does the information indicate? But behavioral information also has an evaluative meaning referring to observers' subjective responses toward the targets (are they good or bad, friendly or dangerous, or should they be approached or avoided?). On the basis of an extensive series of studies, Srull and Wyer (1989) postulated that the descriptive and evaluative meanings of behavioral information are stored separately and processed in different ways. Moreover, their processing serves different functions: The descriptive meaning is processed to categorize people and to accurately infer their traits and intentions. In contrast, the evaluative meaning is processed to direct the perceiver's responses concerning approach or avoidance of the target person.

Clearly, the two meanings are related and interdependent. For instance, the subject's approach or avoidance is influenced by the characteristics attributed to the target. Yet, to consider the positive or negative evaluation of behaviors as approach or avoidance cues (Peeters, 1971) results in predictions that do not directly follow from their status as descriptive cues. In particular, we hypothesize that perceivers avoid targets who produce both extremely positive and extremely negative behaviors, whereas they approach targets who produce moderately positive and negative behaviors. Moreover, we expect that this effect is independent of the specific content of the behaviors.

We assume that negativity effects reflect a risk-avoidance strategy in interpersonal relations. Negative responses toward persons result in avoidance of any further contacts with them in order to avoid the anticipated harmful outcomes of those contacts. In effect, any possible beneficial outcomes of these contacts are lost as well, which is the price for safety. Such a risk-avoidance strategy seems to be most appropriate if the potentially harmful consequences of the actions of persons are severe, as the harm caused by them is likely to be irreversible (Kanouse & Hanson, 1971). Thus, we expect a tendency toward negativity if there is mixed information about a target person and this information is evaluatively extreme.

However, if individuals used only this risk-avoidance strategy to cope with their social environment, their well-being in interpersonal relations would be in jeopardy. Although this strategy protects against potential danger, it narrows the number of partners in social interactions, for it blocks the initiation and development of new relationships. After all, because most people we meet have positive as well as negative qualities, most of them would be rejected if risk avoidance were the only goal. Thus, to maintain or expand one's contacts with other people, one sometimes has to evaluate others positively and to approach them despite their occasional undesirable actions. This somewhat risky strategy is most reasonable if the expected negative consequences are mild rather than severe, as mild discomforts are easier to endure, to reverse, or to compensate by possible benefits. Thus, we expect a positivity bias if moderately positive and moderately negative information about the same target person is available.

Some indirect support for our argument stems from decision research showing that the smaller the gains and losses, the more likely the choice of a risky decision strategy. In contrast, people are more likely to choose the risk-avoidance strategy if the consequences are more serious (Coombs & Avrunin, 1977; Slovic & Lichtenstein, 1968; Zaleska, 1976). More direct support comes from a study that reveals a positivity effect if a fictitious target has a moderately positive and a moderately negative trait, but a negativity effect if the target has an extremely positive as well as an extremely negative trait (Czapinski, 1982). The problem with Czapinski's study, however, is that it manipulated the evaluative extremity of positive and negative adjectives only, whereas their descriptive content varied widely. Thus, the morality-competence distinction was not investigated.

### Present Study

To ascertain the effects of content and evaluative extremity, we manipulated them independently in the present experiment. Specifically, subjects were informed about two positive and two negative behaviors of a fictitious person, with all behaviors referring to the same trait pertaining either to morality or to competence. All four behaviors presented to the same subject were of similar evaluative intensity, but this intensity varied between subjects: Half of them responded to moderately evaluated behaviors (low evaluative extremity), whereas the remainder responded to extremely evaluated behaviors (high evaluative extremity). After reading the information about behaviors of a target person, subjects were asked to indicate their impressions of that target.

Three hypotheses were tested. The *asymmetrical diagnosticity hypothesis* holds that positive and negative information on the same target results in positive impressions in the competence domain but in negative impressions in the morality domain. This hypothesis is consistent with Reeder's and with Skowronski and Carlston's theory.

The second, *evaluative extremity hypothesis* holds that integration of moderately positive and negative information on the same target yields positive impressions, whereas integration of extremely positive and negative information yields negative impressions. Admittedly, the reasoning behind this hypothesis applies mainly to situations in which the target's behavior has

personal consequences for the perceiver. But subjects may generalize and use this decision strategy in situations in which the actor's behavior does not affect them personally.

Our last, *content plus evaluation* hypothesis predicts what happens if both factors, descriptive content and evaluative extremity, vary within the same set of stimulus materials. We predict that the two factors work in an additive way, thus resulting in strong biases if they work in the same direction, but in weak biases if they work in opposite directions. In particular, a strong positivity bias is expected when the critical behaviors refer to competence and are moderately evaluated, whereas a strong negativity bias is expected when the behaviors refer to morality and are extremely evaluated. Finally, for extremely evaluative information referring to competence, and for moderately evaluative information referring to morality, more neutral impressions are expected.

These hypotheses were examined in relation to two dependent measures: (a) specific trait inferences and (b) global evaluations of the target person. Identical predictions were made for both dependent variables because both are not pure measures of descriptive or evaluative meaning. Rather, as most traits are highly evaluative (N. H. Anderson, 1968), trait inferences gauge descriptive as well as evaluative meaning of behavior. Correspondingly, because interpersonal evaluations are frequently based on specific trait or category-related inferences (Fiske & Neuberg, 1990; Srull & Wyer, 1989), global evaluations reflect evaluative as well as descriptive meaning. Note, however, that virtually all studies showing or suggesting (through attributions) positivity effects used trait inferences (Reeder & Fulks, 1980; Reeder, Messick, & Van Avermaet, 1977; Skowronski & Carlston, 1987), whereas studies that yielded negativity effects have typically used global evaluations (e.g., N. H. Anderson, 1965; Fiske, 1980; Hodges, 1974; Simpson & Ostrom, 1976). The question then is whether the two measures function in a similar way, thus indicating that the positivity and negativity biases in these two kinds of studies are comparable.

Finally, we asked our subjects to predict the targets' future behaviors. This measure was of only minor importance in the present study, but was included because some research in this area has used behavioral predictions instead of trait inferences or attributions to gauge negativity and positivity effects (e.g., Coover & Reeder, 1990). Our intention was to explore whether behavioral predictions indeed follow the pattern predicted for trait inferences and global evaluations.

## Method

### Subjects and Design

Five groups of Polish university students (68 women and 40 men) participated in this study. Half of the subjects were randomly assigned to the high-evaluative-extremity condition, and half were assigned to the low-evaluative-extremity condition. Each subject responded to six target persons with male first names. Information about each of three targets referred to one of three preselected moral traits (*honest, loyal, or just*), whereas information about each of the three remaining targets referred to one of three competence-related traits (*intelligent, will power, or courageous*). We used a  $2 \times 2$  factorial design with evaluative extremity (high vs. low) as a between-subjects factor and content domain (moral vs. competence) as a within-subject factor.

### Procedure

The study was introduced to the subjects as dealing with the way that people form impressions of other persons on the basis of information about those persons' typical behaviors. Subjects were told that different descriptions of the same person stemmed from different people who knew that person and had described him in a previous study. The subjects were instructed to form a general impression of the target from this multisource information.

Each target was described by two positive and two negative behaviors pertaining to the same trait dimension. The within-target order of behaviors was random. After the self-paced reading of the four behaviors, subjects were asked to rate that target on several scales, each printed on a separate page. Then subjects proceeded to the next target and repeated the procedure.

Each subject judged three targets whose behavior pertained to one of the three morality-related traits and another three targets whose behavior pertained to one of the three competence-related traits. Every sixth subject began with a different trait; the order of the remaining five traits varied randomly.

### Stimulus Materials

All behavior descriptions were taken from a list of 2,400 behaviors described elsewhere (Wojciszke, Pienkowski, Maroszek, Brycz, & Rajczak, in press). The list consisted of behaviors that referred to 20 trait dimensions, in which 60 behaviors represented the positive pole of the dimension (e.g., *honesty*) and 60 other behaviors represented the negative pole of the same dimension (e.g., *dishonesty*). Two estimates had been collected for each behavior: the extent that it pertained to the trait in question (*prototypicality*) and its desirability (*valence*).

Prototypicality estimates were made by 66 pretest subjects. For the trait honesty, for example, subjects answered the question "To what extent is this behavior a typical example of honesty, that is, how much could you say about a person's honesty based on this behavior alone?" Subjects indicated their judgments on scales ranging from *next to nothing can be said* (0) to *very much can be said* (6). These prototypicality estimates conceptually resemble the diagnosticity measure used by Skowronski and Carlston (1987). Accordingly, Wojciszke et al. (in press) found that increasing the prototypicality of stimulus behaviors resulted in a strong linear increase in extremity of traits inferred from those behaviors. They also found that prototypicality estimates were higher for negative than for positive behaviors among moral traits, whereas the opposite was true among competence-related traits. High correlations between the prototypicality estimates of behaviors and trait inferences made on the basis of those behaviors have also been found by Borkenau (1990) and by Read, Jones, and Miller (1990), for different sets of traits and behaviors.

The second estimate referred to the valence of the behaviors. For each behavior, the same group of 66 subjects responded to the question "Based on this behavior alone, what would be your evaluation of the person who performed such a behavior?" Subjects responded on a scale from *very negative* (−3) to *neutral* (0) and *very positive* (+3).

The prototypicality estimates were used to balance the appropriate stimulus behaviors for the extent that they referred to the positive or negative pole of the relevant trait dimension. The valence estimates were used to manipulate evaluative extremity and to balance positive and negative behaviors (referring to the same trait or target) for their evaluative extremity. The behavior descriptions used in this study are listed in the Appendix.

### Manipulations

*Morality–competence distinction.* The selection of traits representing the two content domains was based on a pilot study in which the 20

dimensions of the Wojciszke et al. (in press) list were mixed with 30 other trait dimensions and then rated for the extent that they involved morality (by 34 subjects) or skills and abilities (by another 40 subjects). Both judgments were made on scales ranging from 0 to 6. *Honest*, *loyal*, and *just* were selected to represent the morality domain, and *intelligent*, *will power*, and *courageous* were selected to represent the competence domain. The average morality ratings of the six traits were 5.65, 4.53, 5.41, 2.06, 3.27, and 2.97, respectively, whereas the average competence ratings were 2.18, 2.30, 3.08, 5.15, 4.63, and 3.53.

**Evaluative extremity manipulation.** On the basis of the valence estimates, a set of two moderately positive and two moderately negative behaviors as well as another set of two extremely positive and two extremely negative behaviors was selected for each trait dimension. All moderate sets (each of them referring to a different trait dimension) constituted the behavior descriptions presented to subjects in the low-evaluative-extremity condition. All extreme sets constituted the descriptions given to subjects in the high-evaluative-extremity condition.

The overall means of the valence estimates of moderately positive and negative behaviors were 0.76 and -0.76, respectively, whereas the mean valences of strongly positive and negative behaviors were 2.35 and -2.31. No estimate of a single behavior deviated more than 0.20 from the appropriate mean (on a scale ranging from -3 to 3). Positive and negative behaviors were thus balanced in evaluative extremity.

Within the individual target descriptions, the two positive and two negative behaviors were also balanced in their relatedness to the respective traits. Specifically, the difference between the prototypicality of positive and negative behaviors of the same target was 0.23 on the average (and varied across the targets from 0.05 to 0.66). However, the differences in valence were confounded with the differences in prototypicality. Specifically, the moderately evaluated behaviors were also lower in prototypicality (2.67 and 2.78 for positive and negative traits), whereas the extremely evaluated behaviors were also higher in prototypicality (4.64 and 4.63, respectively).

Although confounding of valence and prototypicality of stimulus behaviors may seem undesirable, it is almost inevitable: We had as many as 120 descriptions of behaviors pertaining to each trait dimension, yet it was virtually impossible to find acts that were highly prototypical for the positive pole of a dimension and only slightly positive in valence. The same was true of negatively evaluated acts. It may be possible to create such items, but for three reasons we did not.

First, because such items were not found among hundreds of behaviors generated by two hundred subjects (and then rated by more than one thousand other subjects in the study by Wojciszke et al., in press), they are probably unrepresentative of the way in which people think about moral and competence-related traits. Indeed, we have found substantial within-trait correlations between the prototypicality and valence of behaviors. These correlations were especially strong (about .70) for traits pertaining either to morality or competence, whereas for traits referring to neither of these domains the correlations were lower (sometimes 0). In other words, the relation between prototypicality and valence was particularly strong for the traits studied in the present experiment. We therefore decided to represent this relation in our stimulus material.

Second, the 2.67 and 2.78 mean prototypicalities in the low extremity condition are far from 0. Wojciszke et al. (in press, Study 2) have shown for 16 traits that such a prototypicality level of stimulus behaviors leads to quite extreme inferences of relevant traits (4.45 on a scale ranging from 1 to 7), that is, inferences that are only one scale point lower than the average inferences (5.43) from behaviors of the same prototypicality level as those used in the present high-extremity condition. Stated differently, behaviors such as those used in our low-extremity condition instigate clear inferences of the relevant traits, which are not much weaker than inferences from behaviors used in our high extremity condition.

Third, a logical way in which the prototypicality-valence confound should influence our results is to attenuate the effects of the information content in the low-extremity conditions (due to possible weak trait inferences drawn from behaviors relatively low in prototypicality). This would work against our third, description plus evaluation hypothesis.

### Dependent Variables

Having read all descriptions pertaining to the same target, subjects made a trait inference on a scale ranging from -5 (e.g., *dishonest*) to 5 (e.g., *honest*), and they evaluated the target on a scale from *dislikable* (-5) to *likable* (+5). The order of the two scales was varied but had no effect on the results. Hence order of presentation is ignored in the further analyses.

Finally, all subjects were given two behavior descriptions (similar to those that are reported in the Appendix), both of them positive and referring to the trait at issue. They were asked to predict on a scale from *very improbable* (-5) to *very probable* (5) whether the target was likely to show this behavior. Predictions of the two behaviors were averaged, yielding an index of behavior prediction.

### Results

The results were analyzed in two ways. First, separate  $2 \times 2$  analyses of variance were performed on trait inferences, global evaluations, and behavior predictions, with evaluative extremity as a between-subjects factor and the content domain as a within-subject factor repeated for three traits and targets on both levels. Second, we compared the successive cell means (as well as the row and column means from Table 1) with the neutral scale values (0) by means of *t* tests to check whether a positivity or negativity bias occurred in absolute terms.

Table 1  
*Positivity and Negativity Bias in Trait Inferences, Global Evaluations, and Behavior Predictions as a Function of the Content and Evaluative Extremity of the Integrated Information*

Evaluative extremity	Content domain		<i>M</i>
	Competence	Morality	
Trait inferences			
Moderate	1.01***	0.25	0.63***
Extreme	0.33	-0.94**	-0.32**
<i>M</i>	0.67***	-0.34**	
Global evaluations			
Moderate	1.37***	-0.09	0.64***
Extreme	0.56*	-1.30***	-0.38**
<i>M</i>	0.97***	-0.69***	
Behavior predictions			
Moderate	0.92***	0.42*	0.67***
Extreme	0.93***	1.07***	1.01***
<i>M</i>	0.92***	0.75***	

Note. The neutral value is 0.00 for all measures.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

### *Asymmetrical Diagnosticity Hypothesis*

This hypothesis predicted that trait inferences and global evaluations should be generally more positive in the ability than in the morality domain. The analysis of trait inferences revealed the expected main effect of the domain,  $F(1, 106) = 24.53, p < .001$ , with trait inferences being more positive in the competence ( $M = 0.67$ ) than the morality ( $M = -0.34$ ) domain. As shown in Table 1, the former inferences were generally positive and the latter negative (significantly above and below 0). This pattern also held at the level of individual traits: intelligent, will power, and courageous yielded positive trait inferences (0.97, 0.65, and 0.40, respectively), whereas just, honest, and loyal yielded negative ones ( $-0.54, -0.12$ , and  $-0.40$ ). For all traits but honesty, the means were different from the neutral value 0.00 at  $p < .05$ .

The analysis of global evaluations revealed a similar main effect of the content domain,  $F(1, 106) = 84.59, p < .001$ . Evaluations were generally higher and positive in the competence domain ( $M = 0.97$ ), but lower and negative in the morality domain ( $M = -0.69$ ). This pattern was also identified at the level of individual traits: Intelligent, will power, and courageous yielded positive evaluations (0.84, 1.30, and 0.75), whereas just, honest, and loyal yielded negative ones ( $-0.47, -0.09$ , and  $-1.53$ ). For all traits but honesty, these means were different from the neutral value 0.00 at  $p < .05$ .

These results are clearly consistent with the asymmetrical diagnosticity hypothesis, that is, Reeder and Brewer's (1979) and Skowronski and Carlston's (1987) theories. Moreover, they replicate the findings by Skowronski and Carlston (1987, Experiment 2) not only for the trait inference measure (used originally by these authors) but also for the global evaluation measure.

### *Evaluative Extremity Hypothesis*

This hypothesis predicted that trait inferences and evaluations should be more positive if the integrated information was evaluatively moderate as opposed to extreme. The analysis of trait inferences revealed the expected main effect of evaluative extremity,  $F(1, 106) = 9.58, p < .003$ . Moderately evaluative information led to more positive trait inferences ( $M = 0.63$ ) than extremely evaluative information ( $M = -0.32$ ). Moreover, the former inferences were significantly above 0, whereas the latter were significantly below 0 (see Table 1). The difference between the low- and high-extremity conditions was also observed at the level of single traits: intelligent (1.32 vs. 0.61,  $p < .05$ ), will power (1.02 vs. 0.28,  $p < .03$ ), courageous (0.69 vs. 0.10,  $p < .07$ ), just (0.38 vs.  $-1.46, p < .001$ ), honest (0.56 vs.  $-0.79, p < .005$ ), and loyal ( $-0.22$  vs.  $-0.57, ns$ ).

The analysis of global evaluations yielded similar results. Global evaluations of the target person were higher when information about the target involved moderately ( $M = 0.64$ ) rather than extremely evaluated ( $M = -0.38$ ) behaviors,  $F(1, 106) = 18.00, p < .0001$ . As shown in Table 1, the former evaluations were also positive, whereas the latter were negative in absolute terms. The difference between the low- and high-extremity conditions held also for individual traits: intelligent (0.98 vs. 0.70,  $ns$ ), will power (1.83 vs. 0.76,  $p < .01$ ), courageous (1.30 vs.

0.20,  $p < .02$ ), just (0.33 vs.  $-1.26, p < .001$ ), honest (0.33 vs.  $-0.80, p < .002$ ), and loyal ( $-1.22$  vs.  $-1.83, ns$ ).

These results support the evaluative extremity hypothesis for both dependent variables: The higher the evaluative extremity of integrated information, the more negative the relevant trait inferences and the global evaluation of the target person.

### *Content Plus Evaluation Hypothesis*

The interaction between content domain and evaluative extremity was nonsignificant for both the trait ratings and the likability ratings,  $F_s < 1$ . As can be seen in Table 1, the additive effects of content and evaluative extremity produced an interesting pattern of cell means.

As expected, marked and significant negative cell means were only obtained in the morality high-extremity condition. Moreover, the only consistently positive cell means were found in the competence low-extremity condition. In the remaining two conditions (morality low extremity and competence high extremity), trait inferences and evaluations did not deviate significantly from 0.00, with the exception of evaluations in the competence high extremity condition, in which a weak positivity effect was found. As can be seen from the means reported in the previous section, this pattern held also for most of the individual traits.

These results tell a simple story. If asymmetrical diagnosticity and evaluative extremity of the integrated information both favor positive impressions, a clear positivity bias emerges. In contrast, if both these influences favor negative impressions, a clear negativity bias is found. However, if the content of integrated information invites negativity, whereas its low evaluative extremity invites positivity (or vice versa), the two influences cancel out and the impressions tend to be neutral. Thus, the content plus evaluation hypothesis assuming additivity of the two factors was also confirmed.

### *Behavior Predictions*

The analysis of behavior predictions revealed neither the content domain nor the evaluative extremity main effect,  $F < 1$  and  $F(1, 106) = 2.58, ns$ , respectively. As can be seen in the lowest panel of Table 1, subjects' predictions were invariably and significantly positive in all conditions. Predictions were also generally overly optimistic in comparison with what was justified by pure input information on target persons. This may reflect the influence of base rates, that is, the general expectation that people behave in a positive rather than a negative way (e.g., Matlin & Stang, 1978). It seems then that when making predictions, subjects consider not only the input information at hand but also their general expectations concerning others' behavior.<sup>1</sup>

<sup>1</sup> These data suggest also that using behavior predictions rather than direct trait inferences or attributions (e.g., Coovert & Reeder, 1990, Experiment 2) may not be an advisable procedure for gauging positivity-negativity biases, at least in conditions in which only a small amount of information about target persons is available to subjects. However, the influence of generally positive expectations on predictions of concrete behaviors is probably less pronounced if perceivers have more information about the specific target persons (Krueger & Rothbart, 1988; Locksley, Hepburn, & Ortiz, 1982).

## Discussion

The present research suggests that the evaluative extremity of behavioral information plays an important role in information integration: Extremely evaluative information results in negativity effects, whereas moderately evaluative information results in positivity effects.<sup>2</sup>

Moreover, the present results show not only the usual negativity effect for morality-related information, but also the very rare positivity effect for competence-related information. The latter has been shown only by Skowronski and Carlston (1987) for inferences of intelligence and by Czapinski (1982) for global evaluations based on personality-descriptive adjectives varying widely in content.

Although we are not aware of any other studies that manipulated both the diagnosticity and evaluative extremity of the information, we found two experiments in which subjects integrated discrepant behavioral descriptions concerning morality that were either extreme or moderate (Birnbau, 1973, Figure 1, panel A; Skowronski & Carlston, 1987, Experiment 2). In both these studies, the negativity effect was strong and reliable for extreme behaviors, but weak or nonexistent for moderate behaviors. Thus, the results of these studies are consistent with our findings concerning morality.

In contrast, our findings differ from Skowronski and Carlston's (1987) for the competence domain. We found that the positivity effect decreases with behavior extremity, whereas Skowronski and Carlston (1987) found that the positivity effect increases with behavior extremity. But there is an important difference between their study and ours concerning the content of the extremely incompetent behaviors. We selected negative behaviors that indicated low ability and instigated extremely negative evaluations, whereas Skowronski and Carlston's (1987) low-ability behaviors indicated lack of competence only. In effect, many of our low-ability behaviors were dangerous or frightening (see Appendix), whereas in Skowronski and Carlston's (1987) study, only one of the five extremely incompetent behaviors was really dangerous (drinking and driving). The other four were quite innocuous (e.g., "Can't remember how to tie his own shoelaces").

This suggests that the actual pattern of morality-competence differences in impression formation may be more complicated than suggested by the purely diagnosticity-based considerations of Reeder and Brewer (1979) and Skowronski and Carlston (1989): The evaluative extremity of the integrated information may also be important.

### *Relation Between Extremity and Diagnosticity*

At first glance, the present extension of diagnosticity-based models may be understood in one of two ways. First, evaluative extremity may be seen as a factor influencing the diagnosticity of integrated information: The more extreme the behavior, the higher its diagnosticity for the trait at issue. Alternatively, evaluative extremity may be seen as influencing information integration independently of behavior diagnosticity. On the basis of the obtained pattern of results, we favor the second view. If evaluative extremity had affected information integration through information diagnosticity, the diagnosticity-based

asymmetries in both the morality and the competence domains should have been more pronounced in the high-extremity condition than in the low-extremity condition. This would imply a Content  $\times$  Extremity interaction that was not found. Rather, the difference between the two domains remained quite stable across both extremity levels (see Table 1), implying that the influence of evaluative extremity on integration biases is not mediated by behavior diagnosticity.

As noted earlier, Wojciszke et al. (in press) found a strong correlation between behavior prototypicality (a measure similar to diagnosticity) and its evaluative extremity. This correlation indicates a substantial confound of the two behavior parameters in the present study: In the high-extremity condition, the stimulus behaviors were higher both in valence and prototypicality, raising the question which of them produced the differences between the high- and low-extremity condition.

The lack of a Content  $\times$  Extremity interaction helps to clarify this issue as well. If the difference between the two conditions reflected the higher diagnosticity of stimulus behaviors in the high-extremity condition, both diagnosticity-based biases—negativity in the morality domain and positivity in the competence domain—should have been stronger in the high-extremity condition. In the competence domain, however, a reverse relation was obtained: The positivity bias was weaker in the high-extremity condition than in the low-extremity condition. This result suggests that the effects of behavior extremity reflect differences among stimulus behaviors in evaluative extremity rather than in diagnosticity (prototypicality).

Generally speaking, our findings do not imply that evaluative extremity is a stronger predictor of integration biases than the content of the information, or vice versa. Because the levels at which we manipulated both factors were arbitrary, the present experiment cannot tell us which of them is more important. Moreover, because we used prototypicality ratings as an indirect measure of diagnosticity, the present results should be interpreted cautiously. Nevertheless, it seems that integration biases can be predicted more precisely if, in addition to the descriptive content of the information, its evaluative extremity is taken into account.

### *Trait Inferences and Observers' Goals*

The present experiment raises the issue of how to explain the impact of information content and evaluative extremity within a common theoretical framework. The cue-diagnosticity model of impression formation proposed by Skowronski and Carlston (1987, 1989) does not provide such a framework. According to this model, trait inferences are categorization processes in which people use an actor's behavior to assign this actor to one or more trait categories. Some behaviors offer more diagnostic cues for specific trait inferences than others, and the more diagnostic a cue, the higher the probability that the actor

<sup>2</sup> This finding suggests an explanation for why negativity effects are reported more frequently than positivity effects in the information integration literature. In looking for strong and reliable manipulations, researchers often provide information to their subjects that is extremely positive or extremely negative. This tendency, however, produces a reliable negativity effect in information integration.

who performs this behavior is assigned to that trait category. This model is obviously at variance with the results of the present study, which indicate that there is more to trait inferences than diagnosticity alone.

But if diagnosticity models account for only part of the findings, what might a common theoretical framework look like? We would like to suggest that both main effects in the present study, that of content and that of extremity, reflect the goals and interests of perceivers. First consider the effects of content. Perceivers are usually less affected by lack of competence of others than by their immoral behavior. If others are competent, they can help the perceivers or be asked for advice. If they are not competent, this does not affect the perceivers' interests, because they can usually turn to someone else. Competent behavior may therefore be weighted more strongly than incompetent behavior. In contrast, perceivers are more affected by the immoral than by the moral behavior of other persons because immoral behaviors may threaten perceivers' well-being, property, or even their lives, without giving them the chance to avoid or to escape the perpetrator. This may be the reason why immoral behavior is weighted more strongly than moral behavior in information integration.

Obviously, the main effect of content may also be explained in terms of diagnosticity (Reeder & Brewer, 1979; Skowronski & Carlston, 1987). But diagnosticity explanations cannot explain the main effect of behavior extremity, whereas the goals and interests of the perceiver can explain both main effects. From the perspective of the perceiver, the main effect of behavior extremity may reflect a risk-seeking strategy in the case of moderate benefits and losses and a risk-avoidance strategy in the case of extreme benefits and losses. This presupposes that the positive or negative evaluation of another person is understood as a signal to approach or to avoid that person.

An important implication of this theorizing about positivity and negativity biases in terms of approach and avoidance tendencies is that it is at variance with a mechanistic view of information integration as suggested, for example, by N. H. Anderson (1981). This author claimed that we form impressions of other persons very much like a computer that counts and averages bits of information. But the computer analogy of human information integration neglects that the human mind was not designed as a general-purpose information processor, but is rather a biologically based system that was shaped by natural selection to successfully solve various discrete adaptive problems. The way that we process information may therefore be the outcome of small and specific adaptations to environmental pressures in the human evolutionary past (Cosmides, 1989; Eibl-Eibesfeldt, 1989).

Obviously, it's currently impossible to test or even to prove such evolutionary arguments. But what may be done is to derive and to test predictions that follow from a functional view on human information processing (J. R. Anderson, 1991). Concerning the evaluation of other persons, this implies that subjects tend to evaluate others positively who are likely to be beneficial for them and to evaluate others negatively who are likely to be detrimental to them. For example, in addition to the content and extremity effects that were found in the present study, context effects are expected as well. The positivity effect for competence information should be less pronounced if the

perceiver is bound to cooperate with the actor, because occasional incompetent behaviors by a partner imply a lower probability of common success. Second, if moral information and competence information refer to the same actor, a Morality  $\times$  Competence interaction should be found: Although competence as well as morality are favorable attributes, an immoral and competent person should be perceived as more dangerous and therefore as equally negative or even more negative, than an immoral and incompetent person. Thus, the functional view suggests several predictions that differ from those that follow from a mechanistic view.

## References

- Anderson, J. R. (1991). The adaptive nature of human categorization. *Psychological Review*, 98, 409-429.
- Anderson, N. H. (1965). Averaging versus adding as a stimulus-combination rule in impression formation. *Journal of Experimental Psychology*, 70, 394-400.
- Anderson, N. H. (1968). Likableness ratings of 555 personality trait-words. *Journal of Personality and Social Psychology*, 9, 272-279.
- Anderson, N. H. (1981). *Foundations of information integration theory*. San Diego, CA: Academic Press.
- Birnbaum, M. H. (1972). Morality judgments: Tests of an averaging model. *Journal of Experimental Psychology*, 93, 35-42.
- Birnbaum, M. H. (1973). Morality judgment: Test of an averaging model with differential weights. *Journal of Experimental Psychology*, 99, 395-399.
- Borkenau, P. (1990). Traits as ideal-based and goal-derived social categories. *Journal of Personality and Social Psychology*, 58, 381-396.
- Coombs, C. H., & Avrunin, G. S. (1977). Single-peaked functions and the theory of preference. *Psychological Review*, 84, 216-230.
- Covert, M. D., & Reeder, G. D. (1990). Negativity effects in impression formation: The role of unit formation and schematic expectations. *Journal of Experimental Social Psychology*, 26, 49-62.
- Cosmides, L. (1989). The logic of social exchange: Has natural selection shaped how humans reason? Studies with the Wason selection task. *Cognition*, 31, 187-276.
- Czapinski, J. (1982). Positive-negative asymmetry at a group and individual level. Further evidence and a new interpretation. *Polish Psychological Bulletin*, 13, 153-158.
- Eibl-Eibesfeldt, I. (1989). *Human ethology*. New York: Aldine de Gruyter.
- Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*, 38, 889-906.
- Fiske, S. T., & Neuberg, S. L. (1990). A continuum of impression formation from category-based to individuating process: Influences of information and motivation on attention and interpretation. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 23, pp. 1-74). San Diego, CA: Academic Press.
- Hodges, B. H. (1974). Effect of valence on relative weighting in impression formation. *Journal of Personality and Social Psychology*, 30, 378-381.
- Kanouse, D. E., & Hanson, L. R., Jr. (1971). Negativity in evaluations. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, & B. Weiner (Eds.), *Attribution: Perceiving the causes of behavior* (pp. 47-62). Morristown: General Learning Press.
- Krueger, J., & Rothbart, M. (1988). Use of categorical and individuating information in making inferences about personality. *Journal of Personality and Social Psychology*, 55, 187-195.
- Locksley, A., Hepburn, C., & Ortiz, V. (1982). Social stereotypes and



- judgments of individuals: An instance of the base-rate fallacy. *Journal of Experimental Social Psychology*, 18, 23–42.
- Matlin, M. W., & Stang, D. J. (1978). *The Pollyanna principle*. Cambridge, MA: Schenkman.
- Oden, G. C., & Anderson, N. H. (1971). Differential weighting in integration theory. *Journal of Experimental Psychology*, 89, 152–161.
- Peeters, G. (1971). The positive-negative asymmetry: On cognitive consistency and positivity bias. *European Journal of Social Psychology*, 1, 455–474.
- Read, S. J., Jones, D. K., & Miller, L. C. (1990). Traits as goal-based categories: The importance of goals in the coherence of dispositional categories. *Journal of Personality and Social Psychology*, 58, 1048–1061.
- Reeder, G. D., & Brewer, M. B. (1979). A schematic model of dispositional attribution in interpersonal perception. *Psychological Review*, 86, 61–79.
- Reeder, G. D., & Coovert, M. D. (1986). Revising an impression of morality. *Social Cognition*, 4, 1–17.
- Reeder, G. D., & Fulks, J. L. (1980). When actions speak louder than words: Implicational schemata and the attribution of ability. *Journal of Experimental Social Psychology*, 16, 33–46.
- Reeder, G. D., Henderson, D. J., & Sullivan, J. J. (1982). From dispositions to behaviors: The flip side of attribution. *Journal of Research in Personality*, 16, 355–375.
- Reeder, G. D., Messick, D. M., & Van Avermaet, E. (1977). Dimensional asymmetry in attributional inference. *Journal of Experimental Social Psychology*, 13, 46–57.
- Reeder, G. D., & Spores, J. M. (1983). The attribution of morality. *Journal of Personality and Social Psychology*, 44, 736–745.
- Ronis, D. L., & Lipinski, E. R. (1985). Value and uncertainty as weighting factors in impression formation. *Journal of Experimental Social Psychology*, 21, 47–60.
- Roskey, D., & Birnbaum, H. M. (1974). Compensatory effects in moral judgments. Two rights don't make up for a wrong. *Journal of Experimental Psychology*, 103, 171–173.
- Simpson, D. D., & Ostrom, T. M. (1976). Contrast effects in impression formation. *Journal of Personality and Social Psychology*, 34, 625–629.
- Skowronski, J. J., & Carlston, D. E. (1987). Social judgment and social memory: The role of cue diagnosticity in negativity, positivity, and extremity biases. *Journal of Personality and Social Psychology*, 52, 689–699.
- Skowronski, J. J., & Carlston, D. E. (1989). Negativity and extremity biases in impression formation: A review of explanations. *Psychological Bulletin*, 105, 131–142.
- Slovic, P., & Lichtenstein, S. C. (1968). Relative importance of payoffs and probabilities in risk-taking. *Journal of Experimental Psychology Monographs*, 78, 1–18.
- Srull, T. K., & Wyer, R. S., Jr. (1989). Person memory and judgment. *Psychological Review*, 96, 58–83.
- Van der Pligt, J., & Eiser, J. R. (1980). Negativity and descriptive extremity in impression formation. *European Journal of Social Psychology*, 10, 415–419.
- Warr, P. (1974). Inference magnitude, range, and evaluative direction as factors affecting relative importance of cues in impression formation. *Journal of Personality and Social Psychology*, 30, 191–197.
- Wojciszke, B., Pienkowski, R., Maroszek, A., Brycz, H., & Ratajczak, B. K. (in press). Lay inferences of personality traits: The role of prototypicality and between-trait differences. *European Journal of Social Psychology*.
- Wyer, R. S. (1973). Category ratings for "subjective expected values": Implications for attitude formation and change. *Psychological Review*, 80, 446–467.
- Zaleska, M. (1976). Majority influence on group choices among bets. *Journal of Personality and Social Psychology*, 32, 8–17.

## Appendix

### Behavioral Descriptions Used in Two Evaluation Conditions

#### Behavioral Descriptions Used in the Strong Evaluation Condition

##### *Honest*

Having noticed that a shop assistant gave him too much change, Paul returned the surplus.

Paul paid back a loan to an acquaintance who had already forgotten about lending the money.

##### *Dishonest*

Paul caused an accident and ran away.

Paul told a little girl unfavorable things about her father.

##### *Loyal*

When the boss erroneously gave Mark the credit for a colleague's idea, Mark clarified the mistake immediately.

Despite considerable pressure, Mark refused to reveal another's secret.

##### *Disloyal*

Mark peached on a co-worker for egoistic reasons.

After his divorce, Mark refused to meet his children.

##### *Just*

Richard evaluated his co-workers on the basis of their competence, disregarding his personal likings.

After discovering that he had been wrong, Richard apologized to a neighbor for an argument.

##### *Unjust*

Richard blamed his wife and his children for his own failures.

Richard punished his child for shouting with fear in the night, although he himself had taken her to a disturbing movie.

##### *Intelligent*

John easily found a solution to a difficult problem.

John quickly learned some material and remembered it for a long time.



*Lack of Intelligence*

In the presence of visitors, John ridiculed his children for their hobbies.

John drank alcohol while taking medicine.

*Will Power*

After having decided to earn a good grade on an exam, Adam studied 6 hours a day for a long period.

Knowing that he would not benefit from an argument, Adam refrained from quarreling.

*Lack of Will Power*

Although Adam had decided to visit his mother, his friends persuaded him to go to the cinema.

Adam drank an excessive quantity of alcohol.

*Courageous*

Peter admitted a mistake without any fear of losing face.

Peter stood up for a person who was ridiculed by others.

*Timid*

Peter did not leave an ideological organization although he did not believe in the cause.

Seeing a man lying on a sidewalk, Peter was so scared that he ran away immediately.

#### Behavioral Descriptions Used in the Weak Evaluation Condition

*Honest*

Paul told the examiner that he did not know the answer to a question on the exam.

Paul persuaded his friend not to cross the street when the lights are red.

*Dishonest*

Paul intensely discussed a book that he had not read.

Paul pushed himself to the head of a long queue.

*Loyal*

After a vote, Mark yielded to the majority although he had favored another decision.

When he met an old school friend, Mark refused to have coffee with him because he had promised his wife to go shopping with her.

*Disloyal*

Mark informed a friend of another friend's unflattering opinion.

When others stood in a long queue, Mark made a reservation and waited in a coffee shop until his turn.

*Just*

After discovering that he had forgotten an important job, Richard worked a whole night to finish it in time.

Richard did not blame the meteorologists for his rain-spoiled holidays although they had forecasted sunny weather for this period.

*Unjust*

Richard spread a negative opinion about a doctor who had misdiagnosed his appendicitis.

When pouring out wine, Richard gave himself more than he gave the others.

*Intelligent*

John refused to accept a task that he was not able to carry out.

*Lack of Intelligence*

After a long time for reflection, John made the worst decision.

Because John did not understand his boss's motives, he couldn't predict his behavior.

*Will Power*

Adam persuaded his friends to accept his proposal of where to go on vacation.

Adam refused to do someone a favor because he considered the request unjustified.

*Lack of Will Power*

Despite having much work, Adam was not able to get rid of a talkative neighbor.

Only immediately before the exam, Adam started to study seriously.

*Courageous*

When he couldn't unlock his door, Peter climbed to his flat across his neighbor's balcony.

Peter picked up hitchhikers during a nighttime car ride.

*Timid*

Peter refrained from talking in front of a large audience.

During an exam, Peter felt that his head was completely empty.

Received July 31, 1991  
Revision received February 21, 1992  
Accepted July 27, 1992 ■